

Introducing Echo

With an echo we hear both the original sound source and its reflection, noticing the delay between one and the other. Echo is therefore a particular type of reverberation, from the Latin verb reverberare, to strike back or reflect. It is defined as a propagation effect in which, according to Augoyard and Torgue (2005: 111), “sound continues after the cessation of its emission.” Reverberation occurs when surfaces bounce back or reflect auditory waves. Unlike an echo, though, reverberation is most often perceived as almost simultaneous with the produced sound, a resounding that effectively amplifies through instant diffusion of sound waves. Singing in the shower, for example, we hear our own voice in a louder and seemingly fuller version as it resonates against the hard surfaces of the bathroom. In such enclosed spaces, resonance and reverberation overlap as the harmonics of the original sound are reproduced. By contrast, stepping inside an anechoic chamber is sufficient to recognize the importance of this reflection for our day-to-day hearing; it can be a thoroughly disconcerting experience to be without this resonance of one’s voice, as though it never leaves the body.

Reverberation is especially important in that it allows us to locate ourselves in our environment with reflected auditory vibrations of air, water and other media. Our auditory world extends 360 degrees around us, unlike our visual field. Some animals, such as bats, have refined this sense through their faculty of echolocation. Resonance thereby provides information about the spatial characteristics of where we move and orient ourselves in the world, often in combination with other senses. Even the feeling of a room, a place, or a building – its atmosphere – can be determined by the acoustic properties of its surfaces, as a space can feel cold and forbidding when hard reflective surfaces dominate, or warm and inviting when filled with soft absorbent surfaces.

The perceived time lapse between the transmission of an auditory event and its reception due to the distance between the source of the sound and its reflective surface means that echo marks out not only space but, importantly, time. While resonance positions the listener in a distinct space, by contrast echoic delay can produce a sense of dislocation. The sound of an echo is hereby clearly perceived as arriving from elsewhere, “not-from-this-world, of the super-natural” as Lockett (2003) puts it. The delayed return of the sound has an “othering” effect, a separation between self and other. This can appear as an ephemeral memory and even as a double, a doppelgänger or a sonic shadow. In this way, we can feel alienated from the sounds we produce or that are produced nearby and as a consequence, rather than acting as a sonic shadow an echo may ultimately act as a sound in its own right.

Separated from the original sound event through time, the acousmatic qualities of an echo – as a voice heard but with its source hidden – may be considered as a type of recording process. A sound recording separates the moment a sound is made from the occasion in which it is heard – the delay between one and the other may lead to the recording being fetishized in absence of the performer and the performance (Middleton 2006). In order to address the spatial, temporal and political aspects of the echo, our

discussion concentrates on the role of recording techniques and technologies in reproducing, augmenting and manipulating these echoic effects. In music production both echo and reverberation are used to play with the potentials of sound recording. We will argue therefore that ultimately echo is emancipated from the domain of the sound effect to emerge as a sound source in its own right – by means of both analogue and digital technologies.

Echo's Aura

Reverberating sounds, particularly echoes, have played an important role in various cultures. This is evidenced, for example, by cave paintings at acoustically significant places that provide a natural echo (Reznikoff 1995), some of which process and reproduce sounds of animals depicted in rock art (Waller 2006). Another example is the Austrian vocal art of yodelling where the reflective surfaces and distance between mountains are used as a component of the musical performance. Such echoic effects were further harnessed for religious and ritualistic purposes in man-made structures. Reverberation of the voice within acoustically reflective surfaces of large structures, such as temples and cathedrals, can amplify the sense of importance of the speaking person, and thereby lends an impressive aura and power to their message. Till (2010) has, for example, found that the circle of Stonehenge not only has echoic properties, resonating harmonically with specific standing waves as may be expected from a circular structure, but it also has reverberating properties. Stories about the magical qualities of echoic such sound effects have been passed down the generations, as with the unfortunate nymph Echo in Greek and Roman mythologies.

Etymologically Echo provides the term in the English language with overtones of resonance, reverberation and resounding. There are numerous versions of this, but one element seems to remain relatively stable. This is Echo's predicament is that she can only speak by repeating the words that others have spoken to her, rather than her own words. In one version of the story, she echoes the words of the god Pan, to end up with her body being shredded to pieces that were then strewn round the world (Doyle 2005). Another version of the Echo myth can be found in Ovid's *Metamorphoses*, the classic Latin translation of Greek myth (2008). Here the goddess Juno (Hera in Greece) curses Echo for her idle talk that had the effect of distracting Juno from Zeus' extra-marital affairs. Upset by the punishment, Echo hides in a forest, where she encounters a visual variation of her alienating situation in the person of Narcissus, who misrecognises this own reflection in a pond as that of someone else who he falls, obsessively, in love with. When he hears Echo reflect the final parts of his sentences back to him, he mistakenly thinks someone else is speaking but Narcissus nevertheless fails to recognise Echo as a person in her own right, which in turn hurts Echo's passionate feelings and desperate desire to communicate with him. Consumed by grief her body fades away, leaving only the haunting ghostly sound of her echoic voice, as a decentred and invisible being.

Ovid's version of Echo's story is of interest to our argument as notions of power are being played out with respect to who is being heard, who initiates speech and who is aurally (in)significant. In a brief discussion of the blind love story between the image-obsessed Narcissus and the invisible resounding Echo, Derrida (2007), argues that Echo produces her own voice from the fragments of speech she repeats. DeArmitt (2014) further discusses Derrida's various meditations on the subject, emphasising that Narcissus depends on Echo to hear himself. Echo appropriates (eats, cannibalises) Narcissus' speech and that of others to emancipate herself from her marginalised

position by making herself heard (Rietveld 2015). Yet, to do this Echo always has to be listening and, like a recording device, apply her memory (see also Albright 2014).

Echo's Dub

The creative potential of reverberation and echo was first seized upon in Jamaican recording studios in the early 70s. The recording engineers on that Caribbean island, perhaps most famously King Tubby, King Jammy and Lee "Scratch" Perry, created the reggae-related musical genre known as dub. The analogue technologies then available – sprung steel reverb plates the size of doors. These effects were often used in conjunction with tape delay machines such as the Roland Space Echo RE 201, a long recording tape that would record a sound would diminish with every repeat until finally fading to silence; the longer the tape loop, the longer is the delay in its echoic return.

It was by making creative use of reverberation and echo as music production techniques that these Jamaican pioneers had a very significant musical influence that extends up to the present. Along with the Phil Spector in the USA and George Martin in the UK, they established the studio engineer and the producer as a creative force and the sound studio itself as a musical instrument. As Peter Doyle (2005: 5-6) describes, echo and reverb were a feature of the very first popular music recordings: "Echo and reverb made it seem as though the music was coming from somewhere... with the addition of echo and reverb, 'place' and 'space' had become part of the larger musical equation." Doyle charts an early history of such techniques, up until the use of stereophonic tape recording. "A number of key artists ... knowingly made use of spatio-acoustic conditions in order to present uniquely their own 'sense of self'" (ibid: 7). Doyle comments: "The merest touch of echo and reverb could greatly alter the emotive impact of sounds produced, and the affective change often seemed to be out of proportion to the purely sonic changes wrought by these effects." (ibid: 4) It is this emotive power of echo we discuss here.

When multi-track recording became popular in the mid-1960s in Jamaica, echo effects could be manipulated in a more sophisticated manner. The particular Jamaican geographical and historical use of echo reveals some of the most interesting features of echoic phenomena more generally, in several distinct respects. In the first place, the term "dub" meaning to copy, is itself echoic as a studio technique of overdubbing instruments onto a riddim (bass and drum) track. A practice emerged whereby different artists would voice their own lyrics and occasional melodic riffs from keyboards or guitar, over the same riddim track. Some of these riddims would inspire numerous such "versions" by a variety of different artists, the most popular of which as single riddim compilation albums.¹ The most versioned riddim track is reputedly King Jammy and Wayne Smith's "Under Mi Sling Teng," first released in 1984 with to date nearly 400 different versions.²

In the second place, if versioning draws attention to the repeating nature of echo, "dub plate specials" emphasise its uniqueness. Dub plates are the one-off acetate pressings (rather than vinyl) that a sound system owner commissioned a popular artist to record a unique version of their hit that incorporates a special mention of that particular sound system. Dub plates are the ammunition the sound system selector (elsewhere known as DJ) has in his or her arsenal to fire off against their rivals a sound – to win the approbation of the audience. Thus the unique pressing of the dub plate version exploits the "aura" or unique creative power of an original dubbed copy (Eshun 1998: 189). In

addition, the echo effect is widely used from the repertoire available in the selector's sound effects (SFX) console.

The third respect in which dub music exploits the actual echoic character of our auditory experience of space and time in the dancehall session. Reggae music is associated with the "toasting" technique pioneered in Jamaica by U Roy, later developing into DJing (talking over the recording, jockeying the disk) as the antecedent to rap. This can be called an additive aesthetic that contrasts with subtractive echoic one of dub, where all but a hint of melody and vocals have been removed creating room within the musical soundscape for drum and bass to dominate.³ This emptying out of the music track, stripping it back to its raw building blocks, opens up an echoic space for the listener to inhabit with a sense of involvement and belonging (Henriques 2011, p xx). The sheer physical size of the sound system's phonographic technology with tweeters at the top of the speaker stack (sometimes even hung in the trees) and the (much larger) scoop bass bins at the bottom creates a vertical array of frequencies opening up a sonic dimension to space itself (Henriques forthcoming 2018).

Most important, in the dancehall session there are three speaker stacks each pointing directly into the crowd in the middle of the dance floor between them, so the sound is heard directly from the cones of the speakers themselves. This is especially effective with the liminal volumes of sonic dominance (Henriques 2003). Such direct auditory diffusion contrasts with non-phonographic live gigs where the speakers are either side of a stage focusing attention on the performer. It also contrasts with the more familiar experience of surface-reflected echoic listening discussed above. Indeed the lack the echo or reverberation that normally positions and orientates the listener in the sound system session's direct diffusion no doubt inspired the musician to substitute their own echo, dub and reverberation. In this way they filled the gap in the space of performance with the music's own sonic spatiality, extending the present by elongating the decaying tail of a sound. Such echoes themselves repeat a refrain as in the west-African trope of call-and-response, or antiphony, often heard in the dancehall between MC and the audience.

The final respect in which dub music reveals echo's qualities more generally is how echoic gaps in the soundscape operate in a similar manner to how rhythm works musically. This is to continually and simultaneously evoking associations with a just disappeared past and anticipating an as yet unrealized future. So, as well generating a sense of belonging, echo generates a sense of longing. This was also reflected in the Rastafarian ideology embodied in reggae music that sought an escape the inequities of Babylon to journey to the Promised Land of Zion, or a mythical "Africa." As with Nirvana, the fact that this was a heterotopia (or no-place) made it all the more powerful, as various researchers have commented. In the words of Erik Davis (2010: 246) on dub pioneer Lee "Scratch" Perry, "Good dub sounds like the recording studio itself has begun to hallucinate". Such is the power of echo in the production of an alternatively imagined time-space. As Louis Chude-Sokei states,

... it is through dub that the mixing board becomes an instrument, and sound becomes isolated within the context of music as the focus of production. It is through dub that the fundamental dynamic of human thought – sound, silence

and echo – becomes foregrounded through technology. And it is though dub that memory becomes the explicit focus of ritual.⁴

Further to remembering and anticipating, the deconstruction and decay of echo provides an auditory image of the historically enforced discontinuities, disjunctures and shattered landscapes. In this political context, Michael Veal (2007: 197) treats “dub’s heavy use of reverb as a sonic metaphor for the condition of diaspora”, arguing that the echoic fragmentation of conventional narrative song is musical destruction of the Master narrative – and an articulation of an echoic history.

Echo’s Revenge

While tape-based analogue delay produced a recognizable recorded sound in the 1970s, during the early 1980s the process of digital delay was introduced to the array of effects in recording studios. Early digital recording technology made it possible to record fragments of sound or music and to repeat these while controlling the amount and length of decay more precisely than the tape-delay machines mentioned above. Other uses were soon adopted, as the digital recording of sound could be inserted wherever this was required needed in a track. If the chorus of a song sounded particularly good, for example, and there was no time to re-record, this fragment could be repeated wherever the chorus was required in the song structure. From remedial work on the recording, it was a small step to consider the digital echo delay as a phenomenon in its own right that mimics but does not diminish in time, and so would not behave as an ephemeral side effect. This was further developed into what we now know as the digital sampler, of which the Fairlight CMI was one of the first to be commercially successful. With such devices echo becomes a sound in its own right, in addition to being either a natural phenomenon, or an analogue diminishing recorded effect, or scattering that breaks up and “others” the original sound source. In the digital domain the spatial dimension is easily manipulated, the ephemeral sonic quality of an echo is continuously available.

Back in the 1970s, New York-based hip-hop and disco DJs started to create music from existing recordings during their live performances. In addition, Fikentscher (2013) shows that programming recordings in a specific sequential re-contextualises them within a narrative order that suits the theme of the event, the venue, the crowd and the style of the DJ. Not only were music recordings selected and played, and sung or spoken over, but DJs also started to use snippets of recordings, to produce a new structure, during the event. In the context of underground disco this was done, for example, by overlaying an *à cappella* vocal over an instrumental track (Lawrence 2013). In hip-hop, DJs started to “cut” and repeat of parts of recordings, often isolating the middle-eight, or rhythmical solo “break” within a song, if only for a one or two of bars (measures). With two copies of the same record, as well as two turntables and a mixer, the DJ is able to do this live, in response to the dancing crowd. Competitive DJ practices, such as turntablism and controllerism, have further developed such styles of DJing further (Katz 2012).

When the digital sampler became financially more accessible during the mid-1980s, its use was quite quickly expanded from an engineering device to a creative composition tool (Porcello 1991). “Samples” (fragments of music recordings), were appropriated, placed in a new structure, repeated as rhythmical devices, and used as hooks to new songs. In house music, electro and other electronic dance music

genres, sampling techniques became as highly tuned as turntable skills. A telling example of this is “The Amen Break”, which forms the basis of one of the standard break beats in hip-hop productions, based on a particular drum break from just four measures of a 1969 B-side soul recording, “Amen, Brother” by The Winstons (itself a version of Jester Hairston’s 1963 composition “Amen”), played by Gregory S. Coleman. There is a delayed snare in the third measure, and in the fourth measure it is omitted, creating suspense (Nuttall 2011). Like the gasp of breath, producing an instant of desire for closure, this is sufficiently present to excite the listener whenever it is played. Electro artist Kurtis Mantronik (Kurtis el Khaleel, as part of Mantronix) re-constructed this drum rhythm track as part of “King of the Beats,” by splicing the break and mixing version of this with samples from other recordings. Mantronix’ version became a popular DJ tool for DJs to layer with other musical recordings and copies also found their way into the record bags of rave DJs in the UK, who would speed it up to adjust to the needs of their hardcore rave crowds, thereby producing a genre-defining sound that ultimately led to break beat genres such as jungle and drum ’n’ bass (Harrison 2004). The fragmented and displaced echo of a soul track, via electro and rave music, thus became the foundation of a set of new electronic dance genres (Butler 2006).

Echo’s Voice

On the basis of the echoic character of the analogue and digital recording techniques outlined above we suggest that a new composite syncretic voice is produced from the fragments of existing recordings. This raises an original autonomous voice from multiple, often socially marginalised, alienated and ephemeral sources. Sampling practices can be considered as hauntings from a past, to be appropriated or remembered. Echoic elements are found and recombined to create a new voice. This can be an empowering procedure, generating a composite identity that, rather than repeating the past, re-sounds it in and for the here and now, to produce a new sense of the future.

As shown above, New York-based rap artists, for instance, developed the cultural technique of using recorded fragments to make rap the characteristic lyrical form of performance heard within hip-hop. Rose (1994) applauds their resolve and creativity under social pressure, arguing that marginalized by lack of opportunity and racism, a sense of strength and pride was produced through rap’s use of sampling, fragmentation and flow as aesthetic forms. Sampling may involve long hours “digging the crates” as it is called, raiding rare records and original sources for the production of new materials. Selections may well be made because the texture is right, or because the borrowed voice suits a particular mood, regardless of the original source or its intention. At other times, homage is paid to a politically significant voice, such as Martin Luther King, for example.

Such sampling practices have produced interesting debates on authorship and authenticity. Where the sample is recognisable, legal clearance has to be obtained and a royalty paid to musician who originally composed it. This raises broader issues of ownership of cultural products, which tends to favour established artists over creative sampling practices (Schumacher 2004). The music publishing and recording industry has tended to deem hip-hop artists’ sampling as a type of stealing, rather than an original creative work in its own right. Such arguments may stand within the legislative context of IP (intellectual property) courts. One critique, however, is that this has the effect of silencing the composite voice born of oral cultural continuum that gave birth to hip-hop as, for example, Rose (1994) argues. The notion of culture as a free common

good – and the echoic sound as a voice in its own right, in particular – is evidently at odds with the capitalist notion of the individual ownership of private (intellectual) property (Schloss, 2011).

Who owns the echo then? In this journey from the phenomena and myths of echo, through to analogue and digital production techniques, and on to sampling, this key question remains. Is echo original or a form of mimicry? Is Echo's voice that of a person, or an auditory shadowing device? Sound's relational and reciprocal nature make both possible simultaneously. As with dub music, echo calls back both from the past and forward to the future. Ultimately, then, there is both mimicry and an original sound is produced. And so, here is Echo, speaking out in her own voice, finding her own creativity, through the selection and reproduction of sonic fragments. Her echoic technique, it could be said, is one that the rest of us now share.

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¹ According to David Katz (2003: 166) "At Studio One in 1965, Roland Alphonso blew sax on a song called 'Rinky Dink' using the rhythm (sic) of Lee Perry and the Dynamites' 'Hold Down' with the vocals removed. The first single version album is credited as Rupie Edwards' Yamaha Skank on the My Conversation riddim (see Toop, p 118)

² Frenkieh Riddim Database 2011, Sleng Teng Riddim (1985), page 10 (361 - 380)

http://riddims.frenkieh.com/show/riddims/18/page_10/

See also, David Katz, <https://www.theguardian.com/music/2014/feb/20/wayne-smith-sleng-teng-revolutionised-dancehall-reggae>, accessed 20th July 2016

³ Producer Bill Laswell has made a specialty of spatilized of ambient remixes of studio multi-tracks of Bob Marley, Miles Davis and countless others.

⁴ Chude-Sokei 1997, np